

*A<sup>2</sup>  
concl.*

130 does not appear to change.

IN THE CLAIMS:

Rewrite claims 1 and 2 to read as follows:

- A<sup>3</sup>  
concl.*
1. (Amended) A method for testing a decoder of a digital bitstream comprising:  
applying a test bitstream to the decoder being tested to decode the test bitstream, wherein the test bitstream includes at least one picture representing at least in part a reference image portion, wherein the at least one picture includes a region that is a direct-coded representation of the reference image portion and a region that is an indirect-coded representation of the reference image portion, whereby the decoder produces at least one picture including a decoded direct-coded region representative of the reference image portion and a decoded indirect-coded region representative of the reference image portion; and  
comparing the decoded direct-coded and decoded indirect-coded regions representative of the reference image portion produced by the decoder being tested.
  2. (Amended) The method of claim 1 wherein the direct-coded representation is intra-coded, and wherein the indirect-coded representation is one of predictively coded and bidirectionally-coded.

REMARKS

Claims 1-29 are pending in the captioned Application in which claims 1-29 are rejected.

Applicant hereby requests acceptance of this paper which is filed within the first month following the shortened statutory period and provides below for payment of the fee therefor under Rule 1.17(a)(1).

Claim 1 is clarified to expressly state what is inherent in the original wording, i.e. that the recited decoder is a decoder being tested and that the decoded direct-coded and the decoded indirect-coded regions are produced by the decoder being tested. Claim 2 is

amended to correct a typographical error. This amendment does not narrow the scope of any claim element or limitation and so is not limiting of any claim element or limitation, and Applicant reserves the right to the benefit of the doctrine of equivalents with respect thereto.

The specification is amended at pages 11 and 24 to correct a typographical error and replace a homonym.

A copy of the specification paragraphs as amended and/or of the claims as amended marked to show the amendments thereto are submitted in the Appendix at the end hereof.

Telephone Interview:

Applicants thank Examiner Trang U. Tran for extending the courtesy of a Telephone Interview on March 3, 2003. This response includes the arguments made on behalf of Applicant in the Telephone Interview. The Examiner is preparing an Interview Summary for the Record.

In view of the unexpected unavailability of Primary Examiner Michael Lee at the scheduled time of the Telephone Interview, Applicant requests the opportunity for a supplemental Telephone Interview involving Examiner Lee prior to the issuance of the next action should Applicant's claims not be deemed allowable in view of this response.

Rejection Under 35 U.S.C. 102(e):

Claims 1-29 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,400,400 to Isnardi et al. The rejection is respectfully traversed.

Isnardi et al relates to a method and apparatus for automated testing of a video decoder in which a test bitstream must be decoded by two different video decoders 120, 130 and the two decoded outputs from the two video decoders are compared against each other by an analyzer 140. (Abstract; Column 1, line 65 to column 2, line 13 and column 3, lines 9-25)

One of the two video decoders is a reference video decoder 130 known to be compliant with a particular coding standard, e.g., MPEG-1 or MPEG-2 or ATSC. The other of the two video decoders is a video decoder 120 (DUT) to be tested for compliance with the particular video standard, and may be considered a "black-box" decoder without knowing the particular

implementation thereof. (Column 1, lines 47-63). See Declaration of Michael Isnardi submitted herewith, hereinafter referred to as the "Isnardi Declaration," at paragraph 5. (Isnardi Declaration ¶5.)

The apparatus and method of Isnardi et al must respond to problems arising because two video decoders (reference video decoder 130 and test video decoder (DUT) 120) are required:

- (1) Inaccuracies introduced by differences in the post-processing of the two video decoders 120, 130. (Column 6, line 45 to column 7, line 22).
- (2) Synchronization and processing delay differences between the two video decoders 120, 130. (Column 7, line 23 to column 8, line 11, & Figure 4).
- (3) Errors introduced by inaccuracies in the IDCT process of the video decoder 120 and/or 130. (Column 8, line 12 to column 9, line 12).

These problems arise because of differences between the implementations of video decoding under the particular coding standard by each video decoder, which is not present in Applicant's arrangement. (Isnardi Declaration ¶6).

In other words, Isnardi et al describes having a bitstream decoded by two separate video decoders and then comparing the decoded video produced by one video decoder against the decoded video produced by the other video decoder. Isnardi et al does not describe or suggest comparing one part of a picture decoded by a video decoder to another part of that picture decoded by that video decoder. (Isnardi Declaration ¶9).

On the other hand, Applicant's invention relates to a test bitstream comprising a coded representation of a sequence of pictures wherein at least one picture of the sequence of pictures includes a region that is a direct-coded representation of a reference image portion and a region that is an indirect-coded representation of the reference image portion. The two regions of the decoded picture from the one decoder are compared against each other.

In other words, in Applicant's invention, the at least one picture includes [at least] two regions, one being a direct-coded and the other being an indirect-coded of the same reference image portion, represented in the test bitstream. In application, Applicant's test bitstream is applied to the decoder being tested, and the output of that decoder includes pictures having decoded regions corresponding to the direct-coded region and the indirect-coded region. Comparing is by comparing the two decoded portions of the one decoded

picture from the decoder being tested.

Because Applicant's bitstream includes a reference image with two differently coded regions, the decoder being tested is, in effect, made to test itself, i.e. to test its own direct decoding function against its own indirect decoding function with respect to the reference image. If either the direct decoding or the indirect decoding or both is not properly decoding, that is evident from the two regions of the decoded picture. Thus, there is no need for a reference decoder which is necessary to the apparatus and method of the Isnardi et al disclosure.

Thus, the method of Applicants' claim 1 is patentable because it recites"

"applying a test bitstream to the decoder being tested to decode the test bitstream, wherein the test bitstream includes at least one picture representing at least in part a reference image portion, wherein the at least one picture includes a region that is a direct-coded representation of the reference image portion and a region that is an indirect-coded representation of the reference image portion, whereby the decoder produces at least one picture including a decoded direct-coded region representative of the reference image portion and a decoded indirect-coded region representative of the reference image portion; and

"comparing the decoded direct-coded and decoded indirect-coded regions representative of the reference image portion produced by the decoder being tested"

which is not described or suggested by Isnardi et al.

Applicant's claims 2-6 are patentable at least because they depend from patentable claim 1. In addition, claim 2 recites that the direct-coded representation is intra-coded and ... the indirect-coded representation is one of predictively and bidirectionally coded, claim 4 recites the reference image portion includes at least one indicia and a portion of the indicia is in the direct-coded region and a portion in the indirect-coded region, and claims 5 and 6 recite the test bitstream includes an additional picture that is a direct-coded representation of the reference image portion and follows the one picture that includes direct-coded and indirect-coded representations thereof, none of which is described by Isnardi et al.

Further, it is noted that the bitstream of Applicant's invention includes at least two regions in which the reference image is differently coded, thereby to facilitate in one output picture a direct comparison (e.g., side by side comparison) of the decoded versions of the two differently coded regions. While Isnardi et al show an intra-coded region 310 in a test frame

300 of Figure 3A, there is no disclosed relationship between the contents thereof and the rest of the picture. In particular, it appears that the reference area 330 is intentionally different from the rest of the picture to establish reference levels therein.

On the other hand, Figures 2 and 3 of Isnardi et al are directed to determining and compensating for the effects of the post-processing of decoded video by decoder under test 120, e.g., in its post-processing section 210. Post-processing section 212 follows reference decoder 130 to “mimic” the effect(s) produced by post-processing section 210. To avoid the need for information about post-processing section 210, intra-coded areas 310 are inserted into one or more frames of the test bitstream so that the decoded video of intra-coded area 310 produced by decoder under test 120 may be compared to the decoded video of intra-coded area 310 produced by reference decoder 120, i.e. by analyzer 140, to produce data from which post-processing section 212 is calibrated to mimic post-processing section 210. (Isnardi Declaration ¶7).

Isnardi et al describes in relation to Figures 2 and 3 the comparing of the decoded intra-coded area pixels produced by video decoder (DUT) 120 (and its post-processing section 210) to the corresponding decoded intra-coded area pixels produced by reference decoder 130 (and post-processing section 212), including the pixels of reference area 330 and macroblock 340. This comparing is on a pixel by pixel basis to determine the error introduced by post processing section 210 so that post-processing section 212 may be made to produce the same error. As a result, pixels in actual data area 320 produced by decoder (DUT) 120 may be compared to corresponding pixels in actual data area 320 produced by reference decoder 130, i.e. by analyzer 140. (Isnardi Declaration ¶8).

To the knowledge and experience of Dr. Michael Isnardi, an inventor named in the Isnardi et al patent and a person with substantial education and experience in television, video processing and compression (Isnardi Declaration ¶¶ 1, 3 & 4), the apparatus and method described in Isnardi et al do not include differently coded portions of a reference picture that are to be compared and so do not describe the “at least one picture includes a region that is a direct-coded representation of the reference image portion and a region that is an indirect-coded representation of the reference image portion” as recited in the claims of the

above-captioned U.S. Patent Application. (Isnardi Declaration ¶10).

Thus, the method of Applicants' claim 7 is patentable because it recites:

“producing a bitstream of at least one picture of the sequence of pictures that includes a region that includes a direct-coded representation of the reference image portion and a region that includes an indirect-coded representation of the reference image portion,”

which is not described or suggested by Isnardi et al.

Applicant's claims 8-12 are patentable at least because they depend from patentable claim 7. In addition, claim 8 recites that the direct-coded representation is intra-coded and ... the indirect-coded representation is one of predictively and bidirectionally coded, claim 10 recites the reference image portion has at least one indicia and a portion of the indicia is in the direct-coded region and a portion in the indirect-coded region, and claims 11 and 12 recite producing in the bitstream an additional picture that is a direct-coded representation of the reference image portion and follows the one picture that includes direct-coded and indirect-coded representations thereof, none of which is described by Isnardi et al.

On the other hand, the apparatus of Applicants' claim 13 is patentable because it recites”

“a generator of a bitstream of at least one picture of the sequence of pictures that includes a region that is a direct-coded representation of the reference image portion and a region that is an indirect-coded representation of the reference image portion,”

which is not described or suggested by Isnardi et al.

Applicant's claims 14-20 are patentable at least because they depend from patentable claim 13. In addition, claim 14 recites that the direct-coded representation is intra-coded and ... the indirect-coded representation is one of predictively and bidirectionally coded, claim 16 recites the reference image portion has at least one indicia and a portion of the indicia is in the direct-coded region and a portion in the indirect-coded region, and claims 18 and 19 recite the bitstream generator generates an additional picture that is a direct-coded representation of the reference image portion and follows the one picture that includes direct-coded and indirect-coded representations thereof, none of which is described by Isnardi et al.

On the other hand, Applicants' claim 20 is patentable because it recites”

“A bitstream for testing a decoder comprising a coded representation of a sequence of pictures wherein at least one picture of the sequence of pictures includes a region that is a direct-coded representation of a reference image portion and a region that is an indirect-coded representation of the reference image portion,”

which is not described or suggested by Isnardi et al.

Applicant's claims 21-25 are patentable at least because they depend from patentable claim 20. In addition, claim 21 recites that the direct-coded representation is intra-coded and ... the indirect-coded representation is one of predictively and bidirectionally coded, claim 23 recites the reference image portion has at least one indicia and a portion of the indicia is in the direct-coded region and a portion in the indirect-coded region, and claims 24 and 25 recite the bitstream includes an additional picture that is a direct-coded representation of the reference image portion and follows some picture in the sequence of pictures, none of which is described by Isnardi et al.

On the other hand, the storage medium of Applicants' claim 26 is patentable because it recites”

“means for causing a computer to produce a coded bitstream that includes at least one picture of the sequence of pictures that includes a direct-coded representation of the reference image portion and an indirect-coded representation of the reference image portion,”

which is not described or suggested by Isnardi et al.

Applicant's claims 27-29 are patentable at least because they depend from patentable claim 26. In addition, claim 27 recites means for causing the computer to produce an intra-coded representation of the reference image portion, and claim 28 recites means for causing the computer to produce one of a predictively-coded and a bidirectionally-coded representation of the reference image portion, none of which is described by Isnardi et al.

Accordingly, the rejection under 35 U.S.C. 102(e) is overcome and should be withdrawn.

Formal Drawing:

Applicants submit herewith two (2) sheets of formal drawing in a separate paper addressed to the Official Draftsperson.

Approval of the formal drawing and confirmation thereof in the next paper is solicited.


Conclusion:

Enclosed is a check in payment of the \$110.00 for filing a response within the first month. The number of claims remaining being the same as or less than the number previously paid for, no fee regarding the claims is due in consequence of this response. However, should any fee be due in consequence of this response, please charge such fee and deposit any refund to Deposit Account 04-1406 of Dann, Dorfman, Herrell & Skillman.

Applicant respectfully requests that the objections and rejections be withdrawn, and that the Application including claims 1-29 be allowed and passed to issuance.

The Examiner is requested to telephone the undersigned attorney if there is any question or if prosecution of this Application could be furthered by telephone.

Respectfully submitted,  
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March 24, 2003

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